1209.63077

Intellectual Property Office of New Zealand
Te Pou Rāhui Hanga Hou



# CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that the annexed is a true copy of the Provisional Specification as filed on 29 January 1999 with an application for Letters Patent number 333982 made by Bowers, John Murray.

Dated 22 April 1999.

Neville Harris
Commissioner of Patents

COMMISSIONER OF PATENTS, TRADEMARKS & DESIGNS
NEW ZEALAND

**PATENTS FORM NO. 4**

James & Wells Ref: 40557

**PATENTS ACT 1953**

**PROVISIONAL SPECIFICATION**

# METHOD OF CONSTRUCTION OF AN ELEVATED ANNULAR PLATFORM

I, JOHN MURRAY BOWERS, a New Zealand citizen of 54 Thames St, Napier, New Zealand, do hereby declare this invention to be described in the following statement:

# METHOD OF CONSTRUCTION OF ELEVATED ANNULAR PLATFORM

## TECHNICAL FIELD

The present invention relates to a method of construction of an annular platform which is elevated and which can be partially constructed off site and partially constructed on site. Such platforms are ones which rotate, the main example being platforms for milking sheds. Preferably the construction is of an annular platform and is substantially of reinforced concrete. This is an improvement to the method of the provisional specification of New Zealand Patent Application No 330511 which is included in this specification by reference.

## BACKGROUND ART

There are disadvantages in the method disclosed in the prior application. The method is very labour intensive and used a large amount of angle iron. The edges of the panels of pre-cast material are cut in a complex and expensive way. There was rotation about the I-beams in the earlier invention which reduced the stability of the platform.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

## DISCLOSURE OF INVENTION

The present invention provides a method of construction of an annular platform, said platform having an inner and an outer edge and including a number of bail sections, the number being equal to the number of bails, and the dimensions of each bail section being determined from the width of the platform, the number of bails and the length of the centre line; said method including the steps of:

constructing an adequate foundation to take and support the weight of the platform and the dead and live loads to be applied thereon (when completed);

erecting a curved, flanged metal support beam which is positioned along the centre line of the intended position of the platform and elevated to the pre-determined height to ensure the required elevation of the platform, the top of said beam having an inward and an outward flange or flanged edge;

positioning a spacer on the top of said support beam;

preparing the bail sections, each bail section having an inner and an outer edge, and two radial sides, each bail section including:

two bars, each being in length less than or equal to the width of the platform and secured to the spacers;

two shear connector plates, each being positioned in vertical orientation along one radial line at the edge of the bail section and connected to the bars;

two panel support bars, each being positioned along one radial line below the shear connector plates and connected to the inner and outer edging;

at least one panel of pre-cast material, each said panel having an inner edge of the same curved length as that of the inner edge of the bail section, an outer edge that is the same curved length as the outer edge of the bail section, and two straight sides that are the same length as the length of the shear connector plates; each panel being positioned between the two shear connector plates and between the inner and outer edges of the bail section and resting on the panel support bars;

locating an upright edging around each of the inner and outer edges of said bail section, and securing each said edging to the ends of the shear connector plates;

securing panel support bars, each being positioned along one radial line below the shear connector plates, to the inner and outer edging; thereby providing a mould into which the material of the platform can be poured;

positioning and securing within the mould the required reinforcing material;

positioning and securing within the mould along the straight sides of each bail section the required blanks, sleeves and packing for cut-outs and channels to be formed in the finished platform; and

filing the mould with filler material and allowing it to set and/or cure; wherein

said filler material and said pre-cast material bond together to form a single structural layer.

Preferably each panel is of concrete or concrete fibre or other rigid fibrous material, with the shear connector plates being of iron or steel. Preferably the upright edgings are left in place to form the edge of the platform, but may be removable. Preferably adjacent bail s use common shear connector plates.

Preferably the filler material is concrete. Other appropriate materials may also be used, selected from the group consisting of: natural rubber, synthetic rubber; plastics materials; or a compound comprising a combination of these materials. One major selection criterion is that the filler material and the panel material (pre-cast material) can bond together irreversibly.

The present invention further provides an annular elevated platform which comprises:

an annulus of material which has an inner and an outer edge;

an adequate foundation to take and support the weight of the platform and the dead and live loads to be applied thereon (when completed);

a curved, flanged metal support beam located along the centre line of the intended position of the platform and elevated to the pre-determined height to ensure the required elevation of the platform, the top of said beam having an inward and an outward flange or flanged edge;

a spacer positioned on the top of the said support beam;

a plurality of bail sections, the number being equal to the number of bails, and the dimensions of each section being determined from the width of the platform, the number of bails and the length of the centre line; wherein

each bail section has an inner and an outer edge, and two radial sides, each bail section including:

two bars, each being in length less than or equal to the width of the platform and secured at the midpoint to the spacers;

two shear connector plates, each being positioned in vertical orientation along one radial line at the edge of the bail section and connected to the bars;

two panel support bars, each being positioned along one radial line below the shear connector plates and connected to the inner and outer edging;

at least one panel of pre-cast material, each said panel having an inner edge of the same curved length as that of the inner edge of the bail section, an outer edge that is the same curved length as the outer edge of the bail section, and two straight sides that are the same length as the length of the shear connector plates; each panel being positioned between the two shear connector plates and between the inner and outer edges of the platform and rests on the panel support bars;

an upright edging around each of the inner and outer edges of said annulus, and secured to the ends of the shear connector plates;

material which fills the mould made by the inner and outer edgings, the shear connector plates and the pre-cast panel; wherein said filler material and said pre-cast material bond together to form a single structure as the said annulus of material;

reinforcing which is positioned within the layer of filler material.

The present invention further provides a kit set of parts for use in the construction of an elevated annular platform, said kit including: a plurality of the elements for a bail section, said elements including:

one shear connector plates, to be positioned along one radial side and secured at the midpoint to the upright spacer;

at least one panel of pre-cast material per bail, each said panel having an inner edge of the same curved length as that of the inner edge of the bail section, an outer edge that is the same curved length as the outer edge of the bail section, and two straight sides that are the same length as the length of the shear connector plates; each panel being positioned between the two shear connector plates, and between the inner and outer edges of the bail section;

wherein said elements are crated or packed to maximise the use of available space in a crate or container for shipping to the site of the construction of the platform.

## BRIEF DESCRIPTION OF DRAWINGS

By way of example only, one preferred embodiment of the present invention (the second embodiment) is described in detail with reference to the accompanying drawings, in which:-

Figure 1 is a partial plan view of a bail section of the platform of the second embodiment of the present invention, without the concrete filling;

Figure 2 is a cross-section along the line AA of Fig. 1;

Figure 3 is the same cross-section as shown in Fig. 2 before the filler is added;

Figure 4 is a side elevation of the end of the join between two bail sections of the present invention, part way through the method of construction; and

Figure 5 is the same view as in Fig. 4, at the end of the method of construction.

## BEST MODES FOR CARRYING OUT THE INVENTION

Referring to the Figs. 1 to 5 of the drawings, a second embodiment of a platform 102 is thereshown in part. Like reference numbers refer to the same part as previously described in the first preferred embodiment.

Referring to Figs. 3 to 5, an upright spacer 130 is placed on the top flanged portion 6 of the I-beam 4. A bar 132 is centrally secured to top of the upright spacer at

the edge of each bail section by known means such as welding. A shear connector plate 110 is centrally attached to the bar 132 by known means such as welding.

A curved metal upright inner edging 13 and outer edging 14 is positioned (Figs. 2 and 3) at the inner edge 11 and at the outer edge 12 (Fig. 1). The upright edgings 13 and 14 are located along all or substantially all of the inner and outer circumferences of the platform 102. The ends of each of the edgings 13 and 14 are secured to the ends of the shear connector plates 110. The method of securement can be by any known means, for example bolting, welding (etc).

Panel support bars 131 are positioned radially directly under the shear connector plates 110 and are connected by known means such as welding to the inner and outer edgings (14 and 14 respectively) and to the upright spacer 130.

Each bail sections 3 includes a panel 115. The panel 115 is dimensioned to fit within the area bounded by the inner edge 11, outer edge 12, and the connector plates 110 of each bail section 3. The panel 115 rests on the panel support bars 131.

Blanks and cut-outs (109, 117, 118; Fig. 1) are positioned along the straight sides of each bail section 3, for removal after the pouring of the concrete 23. The spaces left can then be used, for example, to secure bail dividers and milking equipment on and to the platform 102. Sleeves (not shown) can be left in place of the blanks or the cut-outs, which sleeve can remain in the concrete when poured, if so desired. The advantage of placing the blanks at the edges is that it is easier to cut out sections of the pre-cast panel 115 at the edges than further in as is required in the first

embodiment. As can be seen in Fig 4 the edges of the panel 115 can remain square instead of being undercut, which is another improvement on the first embodiment.

Each panel 115 is formed of a pre-cast material. Each panel 115 is of a thickness that is slight compared to the finished thickness of the platform 102. The pre-cast material is optionally concrete or concrete and fibre. However other materials may also be used. For example the material may be fibre-glass, or a rigid plastics material. One selection criteria is that the material bonds to concrete or the filler material used for the platform 102. Alternatively, if so desired, non concrete, non-metallic materials may be used for the pre-cast elements as well as for the filler.

The above described elements are used in the method of construction of the present invention in the following manner (using concrete as the material 23): an upright spacer 130 is positioned on the flanged top 6 of the I-beam 4. The spacer 130 is approximately rectangular in cross-section. Other shapes may be used if so desired. A bar 132 is attached by known means to the spacer. The shear connector plates 110 are rigidly attached to the bar 132. The inner and outer edgings (13, 14) are bolted or otherwise secured to the inner and outer ends (respectively) of the shear connector plates 110. The plate support bars 131 are connected to the inner and outer edgings (13, 14) and the upright spacer 130 by known means. The panel 115 rests on the support bars 131. The blanks and cut-outs 109, 117, 118 are secured in known manner in the pre-determined positions.

These elements form a free-standing mould for the annulus of the platform 102. The reinforcing rods 21 and 22 is inserted in known fashion and as previously

described in the first preferred embodiment. The concrete 23 forming the platform 102 is poured into the mould and allowed to set and cure. The concrete 23 is poured so that the mould is filled to the top of the outer upright edging 14. A slope, as described above, may be used on the top surface of the concrete 23.

The blanks and cut-outs 109, 117, 118 are later removed, leaving spaces (or the sleeves, if used) ready for installation of further equipment.

The above described platform 102 has been described as being poured in one piece. However, it will be appreciated that only part of the annular mould need be filled with the concrete 23. Thus the annulus could be formed in two or more pieces.

The present invention includes all variations which may be obvious to those who are skilled in the field.

John Murray Bowers
by his authorised agents
JAMES & WELLS
PER:

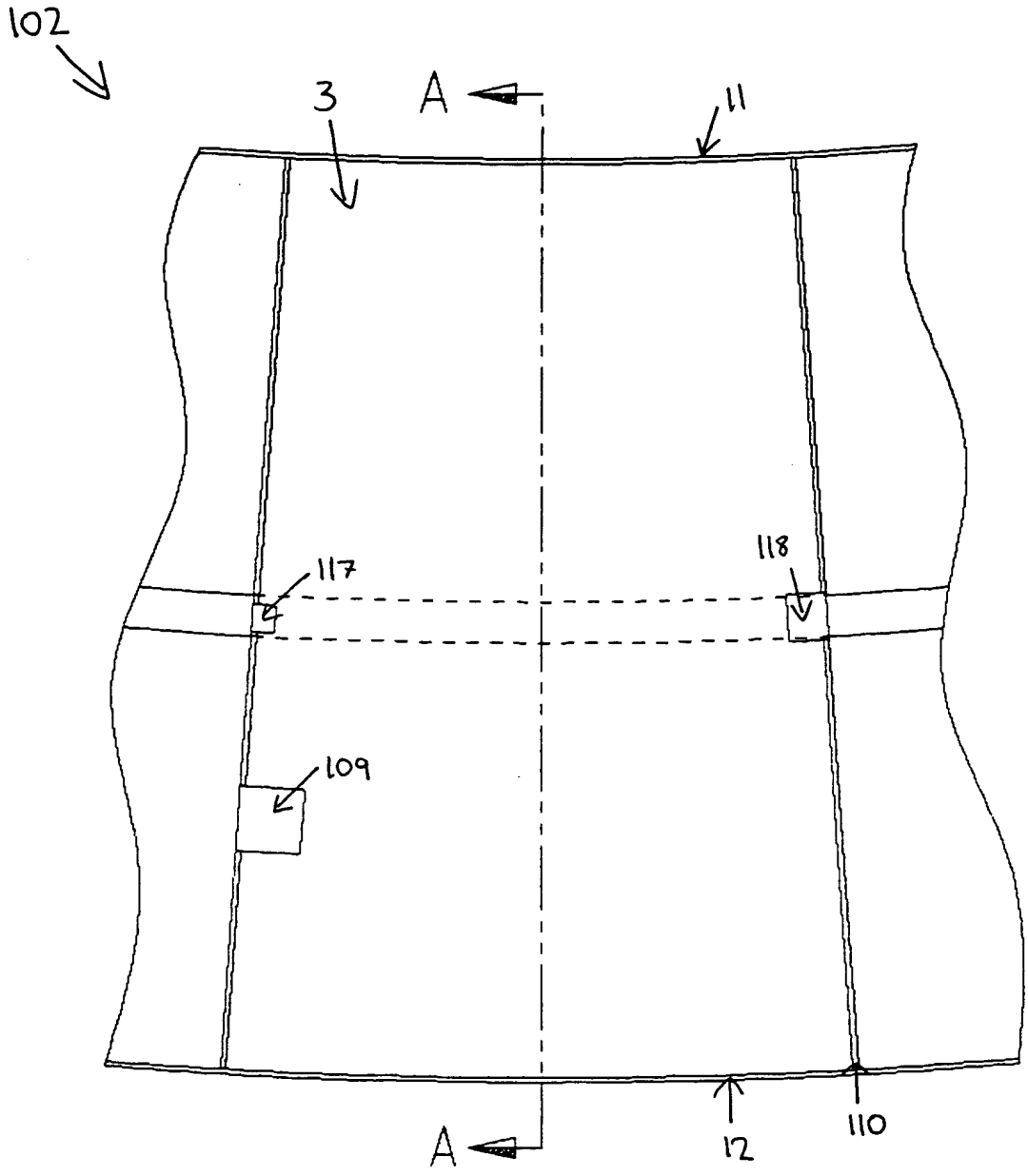


Fig. 1

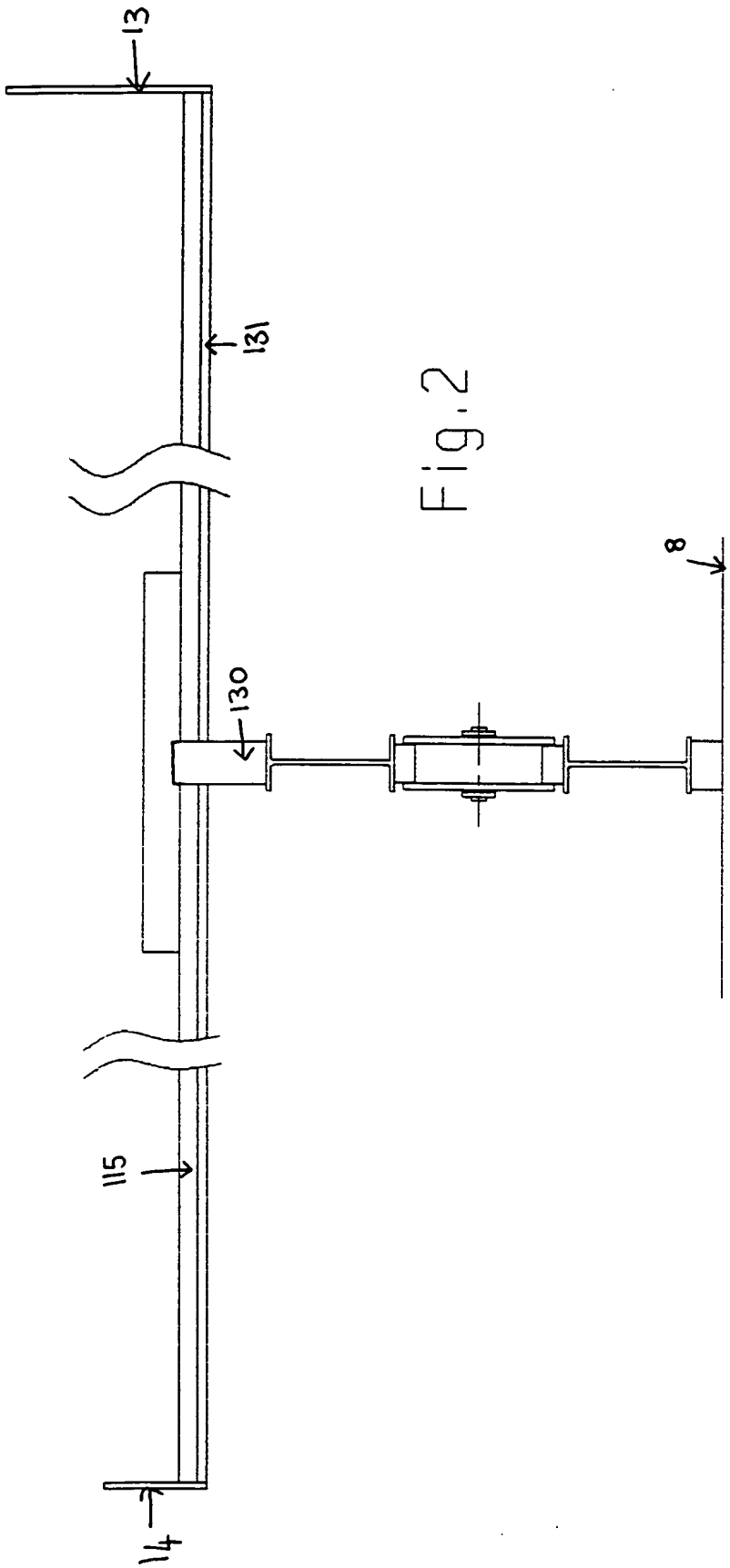


Fig. 2

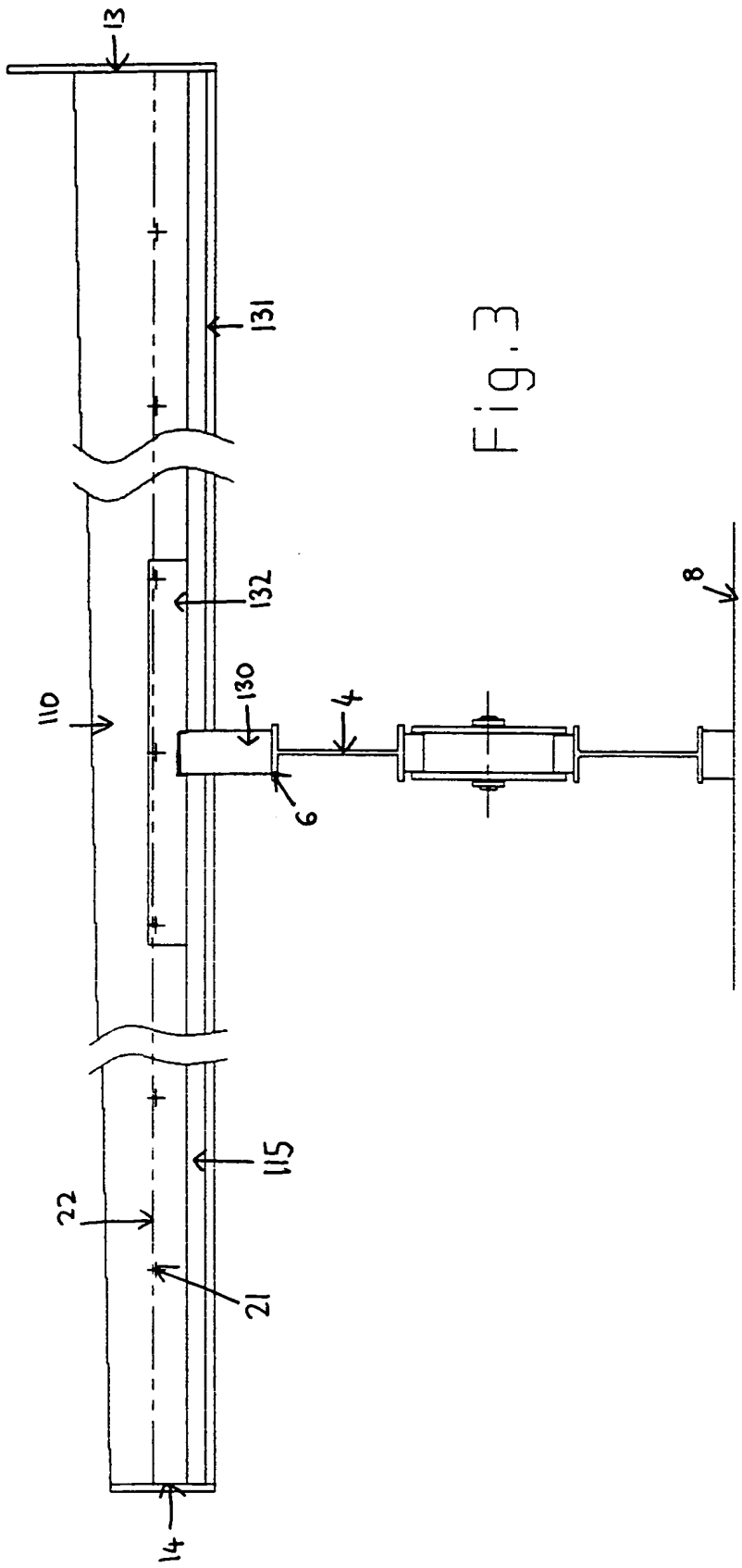


Fig.3

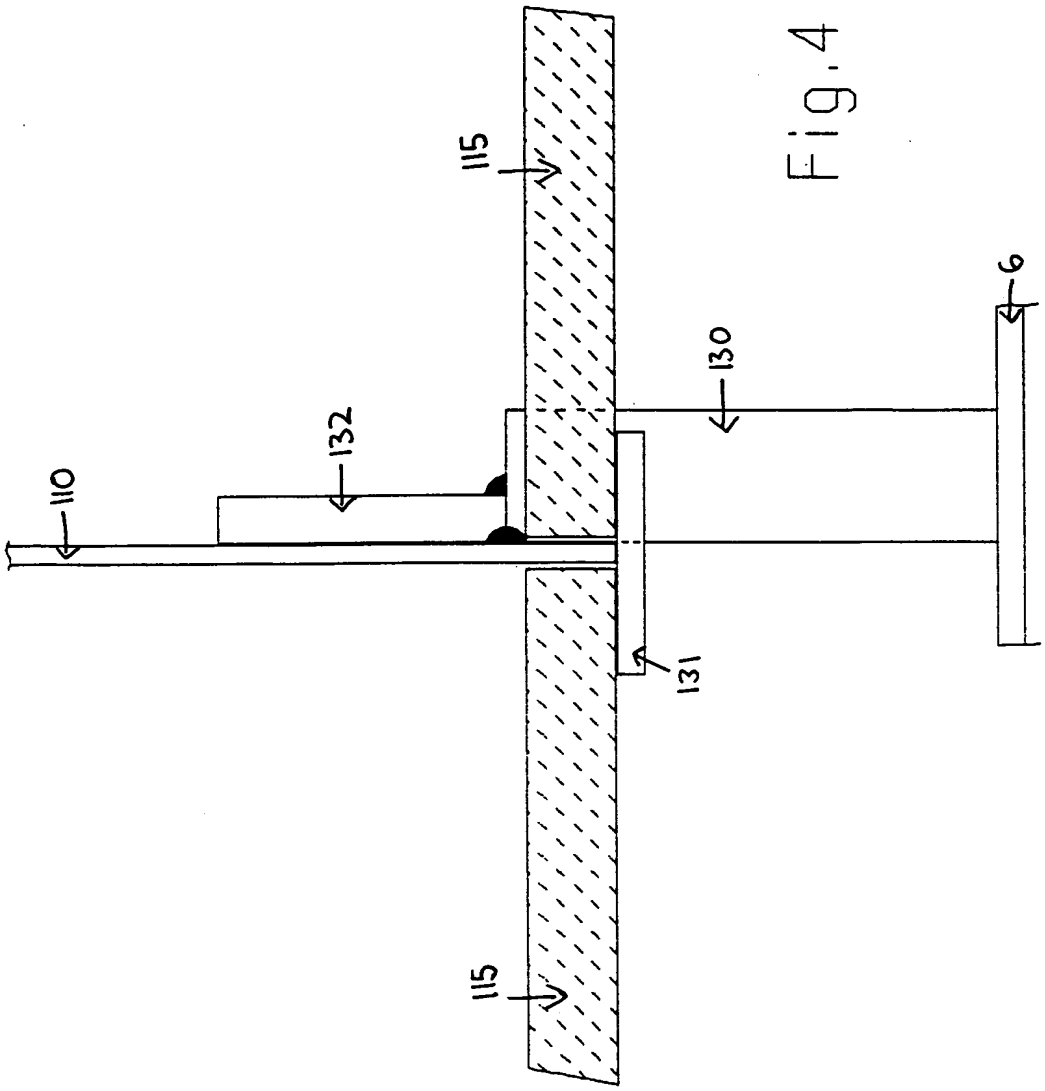


Fig. 4

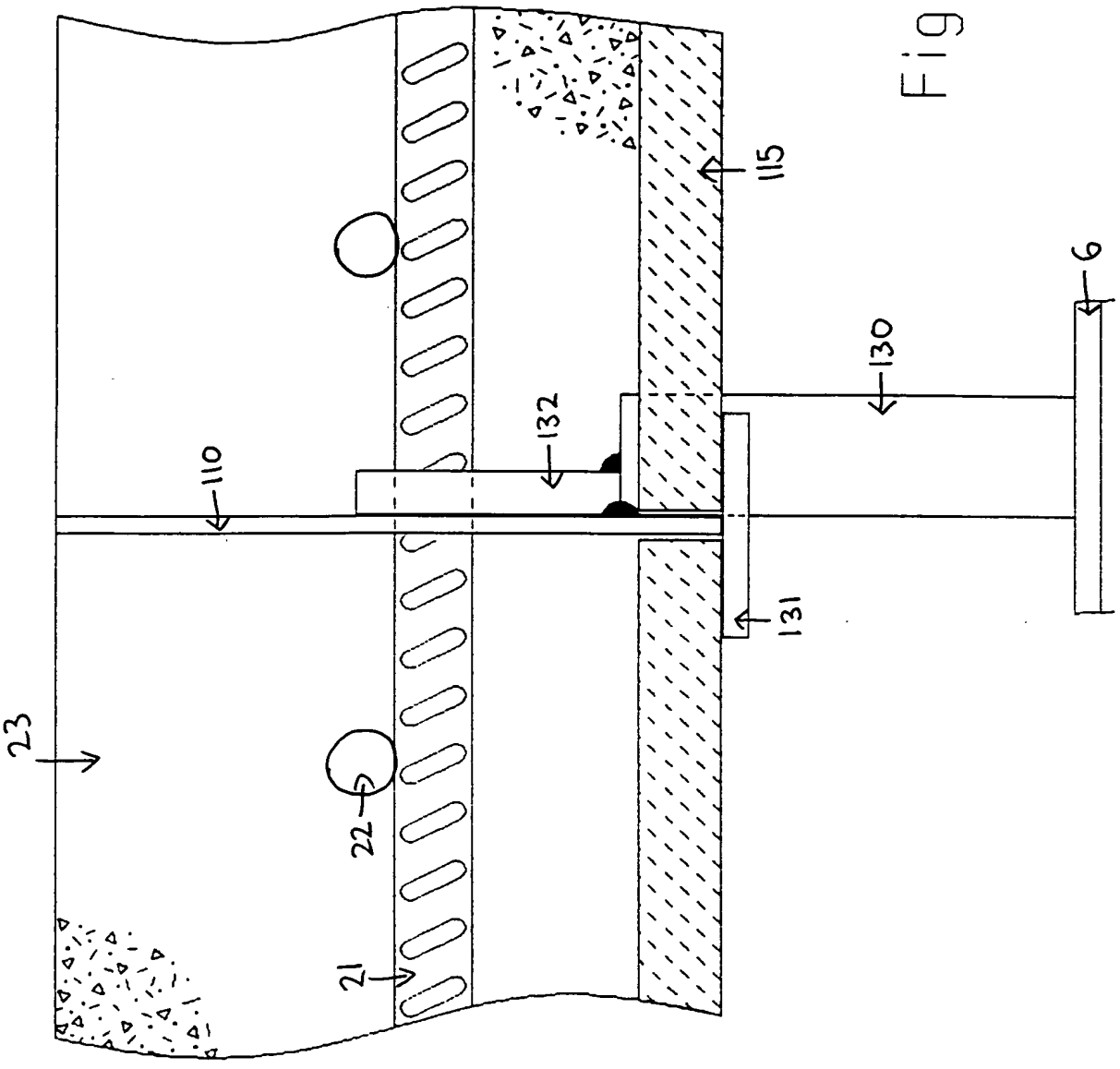


Fig.5